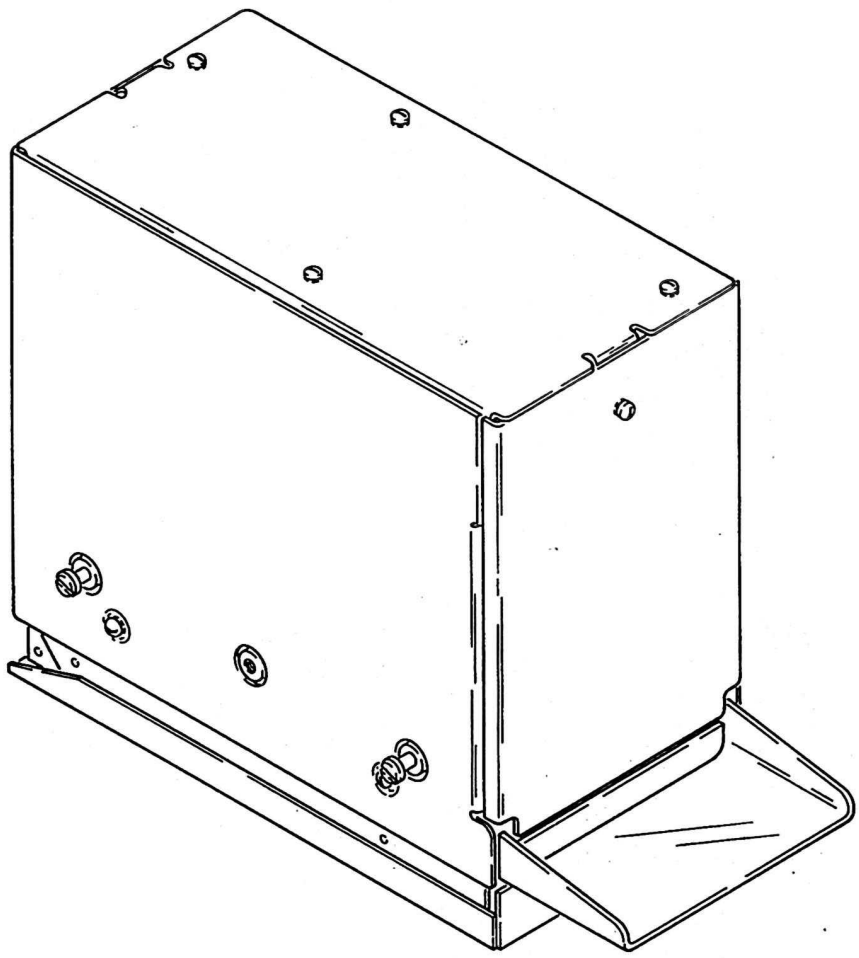
BFV-2

PARTS and SERVICE

MANUAL



CRANE

NATIONAL VENDORS
12955 Enterprise Way
Bridgeton, MO 63044

5277466

AUGUST 1991

The BFV-2 Bill Validator has been engineered to our own rigid safety and performance standards. It has been manufactured in accordance with the safety standards of Underwriter's Laboratories. To maintain this degree of safety and to continue to achieve the level of performance built into this Bill Validator, it is important that installation and maintenance be performed so they do not alter the original construction or wiring and that replacement parts are as specified in the Service and Parts Manual. Your investment in this equipment will be protected by using this Service and Parts Manual in your operation, service and maintenance work. By following prescribed procedures, machine performance and safety will be preserved.

The BFV-2 Bill Validator is warranted for one (1) year against defective parts and workmanship. Any part or parts which are proven to be defective within one (1) year of the date of shipment will be repaired or replaced free of charge when the defective part is returned, with transportation charges prepaid, to the destination designated by the National Vendors Warranty Department. All labor charges shall be for the account of customer.

This warranty applies only to the original purchaser of the BFV-2 Bill Validator and is null and void if the Bill Validator is sold during the period of warranty.

This warranty does not apply to a) electrical components, wiring, or circuits and/or for all mechanical parts or assemblies damaged as a result of operating the Bill Validator at other than 115 volts, 60 Hertz current or b) in event of vandalism, fire or negligence, or c) drive belts, or d) when other manufactured components are installed in the BFV-2 Bill Validator.

National Vendors is not responsible for any cost of service rendered or repairs made by customer or its agents on Bill Validators or parts unless authorization to incur such expense has been given in writing by National Vendors prior to incurring such expense.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NATIONAL VENDORS SHALL NOT BE RESPONSIBLE FOR CONSEQUENTIAL OR PUNITIVE DAMAGES. National Vendors neither assumes nor authorizes any person to assume for it any obligation or liability in connection with the sale of said equipment or any part thereof.

National Vendors
A Division of Unidynamics, Corp.
12955 Enterprise Way
Bridgeton, MO 63044

2-15-91

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SPECIFICATIONS

CURRENCY ACCEPTED:	U.S. $1 and $5 bills.
DIMENSIONS:	Height: 5-3/4 IN. Width: 3-1/8 IN. Length: 7-1/4 IN.
WEIGHT:	5 - 7 LBS.
POWER REQUIREMENTS:	115 VAC @0.5 AMPS
ENVIRONMENT:	Indoor use only

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SERVICE
SECTION I

MAJOR ASSEMBLY ACCESS
(Refer To Figure 1)

CAUTION

Observe electro-static discharge control procedures when handling PCB assemblies.

1. Access the PCB cover assembly (1), by removing the screws (2) at each end.

2. Remove the right and left side covers (3 and 4) by removing two screws (5) along each side.

3. Squeeze the latch bar tabs (7) together and pivot the platen assembly (6) away from the frame (8).

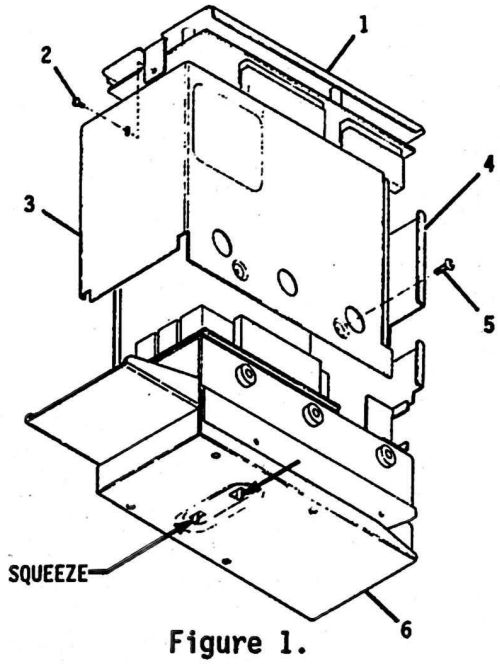


Figure 1.

PLATEN ASSEMBLY REMOVAL
(Refer To Figure 2)

1. Remove one "E"- type retaining ring (1) from end of the pivot shaft (2).

2. Slide the platen assembly (3) to the right and tilt the left side of the platen assembly away from the bill guide (4) and lift clear.

3. Set the platen assembly aside.

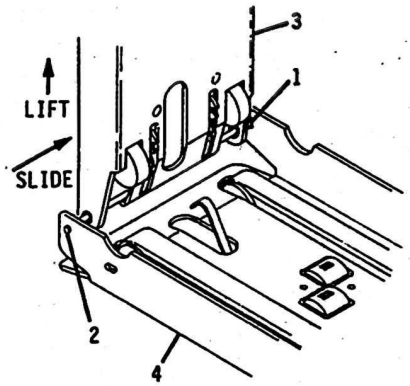


Figure 2.

DISCONNECTING HARNESS FROM PCB
(Refer To Figure 3)

1. Remove the black lead from E1 and the white lead from E2 on PCB assembly. Tag and identify the leads for reconnection to the PCB assembly.

2. Disconnect the harness connectors from P1 and P3 on PCB assembly.

3. Set the PCB cover assembly aside.

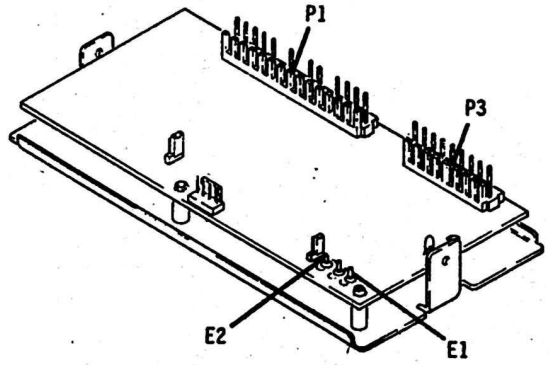


Figure 3.

BILL GUIDE REMOVAL
(Refer To Figure 4)

1. The bill guide (1) can be separated from the frame assembly (2) by removing four screws (3).

NOTE

The following procedure is for emergency use. However, it is not recommended due to difficulty in obtaining proper head alignment. National Vendors recommends that the bill guide with scan heads attached, be returned to the Factory Service Center for repair if either item needs replacement.

2. Examine the scan heads (4) for wear. If the scan heads show scratches or flat spots, unsolder the leads connected to the heads and remove the heads. Identify leads for reconnection.

3. Set the bill guide aside.

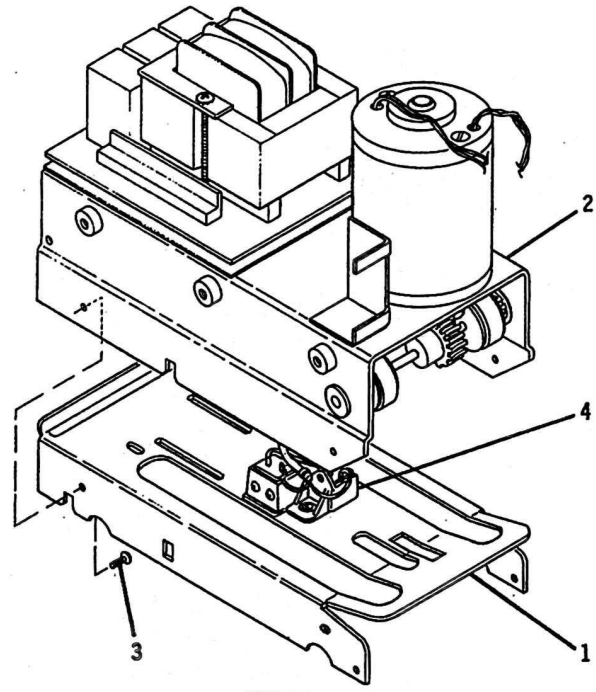
4. If the scan heads do not show signs of wear, pull as much scan head cable as possible through the frame. This will allow the bill guide to be moved aside in the following steps.

DRIVE TRAIN DISASSEMBLY
(Refer To Figure 5)

1. Lift the belts (1) off the drive pulleys (2) toward the frame.

2. Using a 1/16in. Allen wrench, loosen the set screw (3) securing each drive pulley and the drive gear (4).

3. Remove the retaining ring (5) from the drive shaft (6) then slide the drive shaft thru the bushing (7) in the frame assembly (8).



NOTE

Do not let scan head cable pull on scan heads when removing bill guide.

Figure 4.

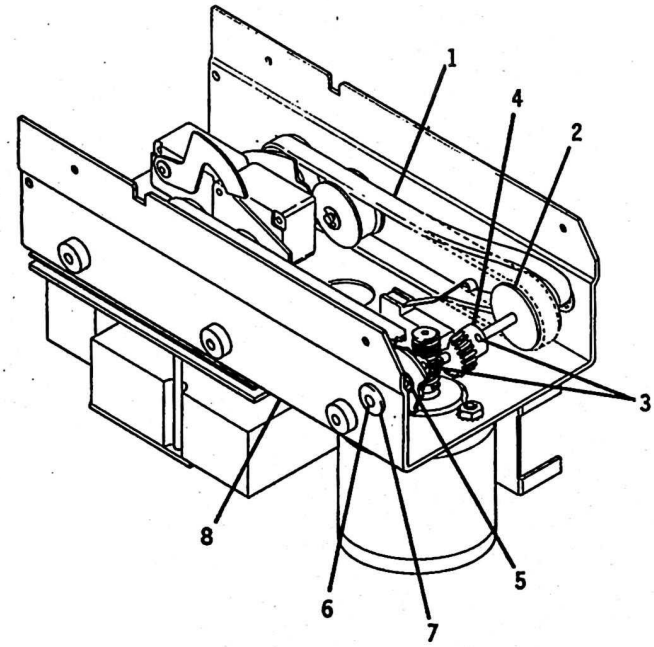


Figure 5.

NOTE

As the drive shaft is pulled from the frame the drive pulleys, drive gear and spacer collar will fall free. Be prepared to catch them.

4. Place the drive pulleys, drive gear, spacer collar and retaining ring on the drive shaft after removal and tighten the set screws. This will prevent loss of parts.

MOTOR REMOVAL (Refer To Figure 6)

1. Disconnect motor connector (1) from harness plug (2).

2. Remove the two #6-32 nuts (3) and the two external tooth lockwashers (4) from motor studs and remove the motor (5) from frame.

3. Inspect the worm gear (6) for wear. If worn, loosen two Phillips head screws (7) and remove gear.

4. Remove the nylon bushing from the motor shaft.

(Refer To Figure 7)

5. Inspect the switches (8), idler rollers (9), belts (10), and bushings (11), for signs of wear and replace as needed.

MOTOR INSTALLATION
(Refer To Figure 8)

1. Place the nylon bushing (1) and worm gear (2) on the motor shaft.

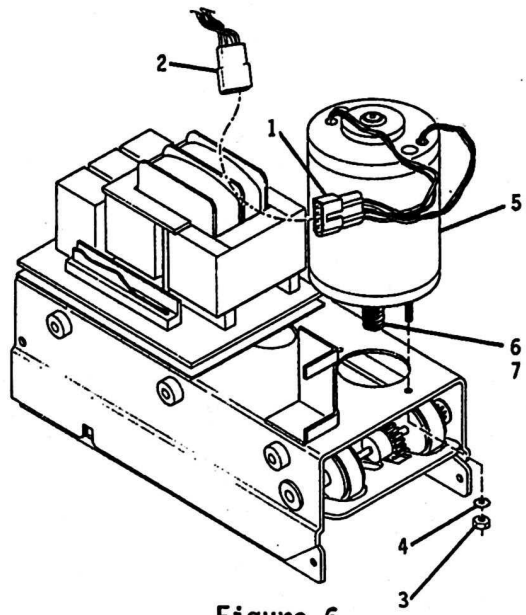


Figure 6.

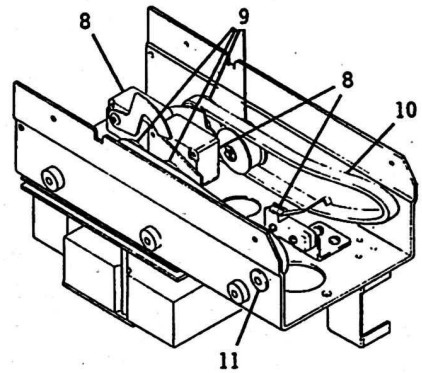


Figure 7.

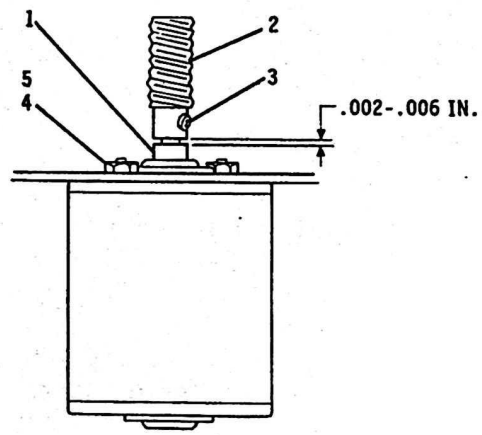


Figure 8.

2. Using a feeler guage between the nylon bushing and the worm gear, adjust the motor shaft end play to .002in.-.006in. Tighten the Phillips head screws (3) to secure the worm gear.

3. Place the motor on the frame assembly and retain with two #6-32 nuts (4) and two external tooth lockwashers (5). Finger tighten only.

DRIVE TRAIN ASSEMBLY
(Refer To Figure 9)

1. Pack the motor worm gear with molydisulfide grease.

NOTE

Do not allow grease to get on roller surfaces, belts, etc. Excess grease should be wiped off with a lint free rag.

2. Insert the drive shaft (1) through the bushing (2) in the right side of the frame assembly,(3). Make sure the drive shaft is installed with the retaining ring end first.

3. Slide the drive shaft through the spacer collar (4),right side drive pulley (5), drive gear (6), left side drive pulley (7) and left side bushing (12).

4. Install one "E"-type retaining ring (8) in the groove on the left side of the drive shaft.

GEAR TRAIN ADJUSTMENT
(Refer To Figure 9)

NOTE

The following adjustments must be made with the bill guide (9) installed.

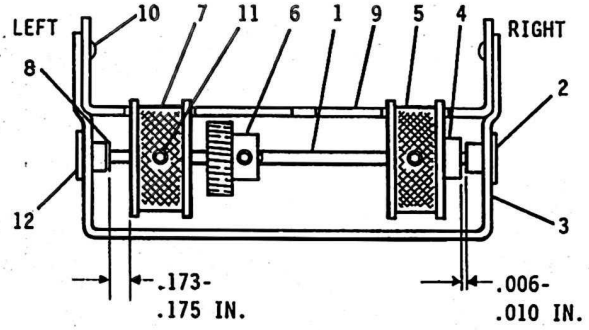


Figure 9.

1. Temporarily install the bill guide and secure it to the frame with four screws (10).

2. Using a small phillips screwdriver or similar tool, press the right end of the drive shaft toward the left. The retaining ring should rest against the bushing. Adjust the gap between the retaining ring and the left drive pulley to .173in.-.175in. Tighten the set screw (11) in the drive pulley using a 1/16in. Allen wrench. Be sure the flat on the drive shaft faces forward and the set screw tightens against the flat.

NOTE

Be sure the drive gear (6) is next to the right side drive pulley (5) before performing step 3.

3. Maintain pressure on the drive shaft and slide the right drive pulley (5) and spacer collar (4) against the right bushing (2). Adjust the gap between the bushing (2) and the spacer collar (4) to .006in.-.010in. Tighten the set screw in the drive pulley (5) as in step 2 above.

(Refer To Figure 10)

4. Remove the bill guide.

5. Slide the drive gear (6) to the left and center the teeth of the drive gear on the centerline of the worm gear (12). Center alignment is critical.Tighten the set screw as in step 2 above.

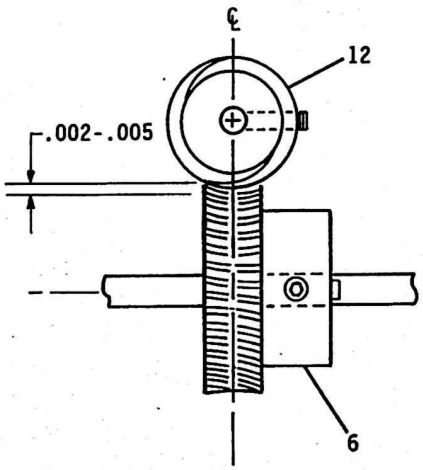


Figure 10.

6. Adjust gear backlash by moving motor toward or away from drive gear until .002in.-.005in. play is obtained. Hold down on worm gear while checking backlash.

7. Tighten the motor mounting nuts.

SCAN HEAD INSTALLATION AND ALIGNMENT
(Refer To Figure 11)

NOTE

The following procedure is provided for emergency use. However, it is not recommended due to difficulty in obtaining proper head alignment. National Vendors recommends that the bill guide with scan heads attached, be returned to the Factory Service Center for repair if either item needs replacement.

1. Attach the heads (1) to the underside of the bill guide (2) with screws (3). Do not tighten the screws at this time.

2. If the scan head leads were removed, solder them in place as shown in Figure 11.

NOTE

Reliable bill validation requires scan heads that are properly aligned. The head is aligned correctly when the air gap or "window" in the active element is perpendicular to the sides of the bill guide. This "window" is not visible without magnification. However, the gap is perpendicular to the long sides of the scan heads. As a result, these sides can serve as a reference point during alignment.

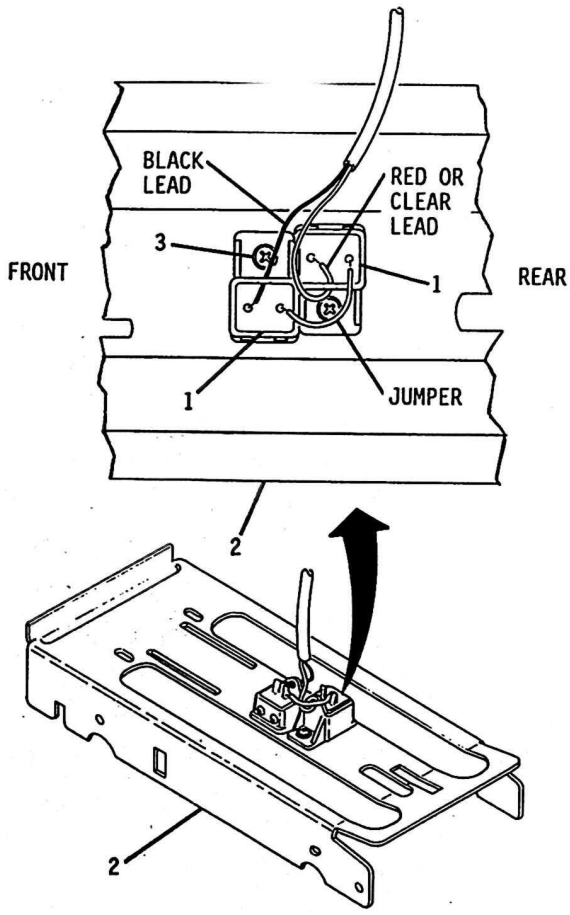


Figure 11.

(Refer To Figure 12)

3. Align the long side of the scan head (1) with the slot in the bill guide (2) and tighten screw (3). The side of the scan head should be parallel with the slot in the bill guide. This is best done on back side of bill guide.

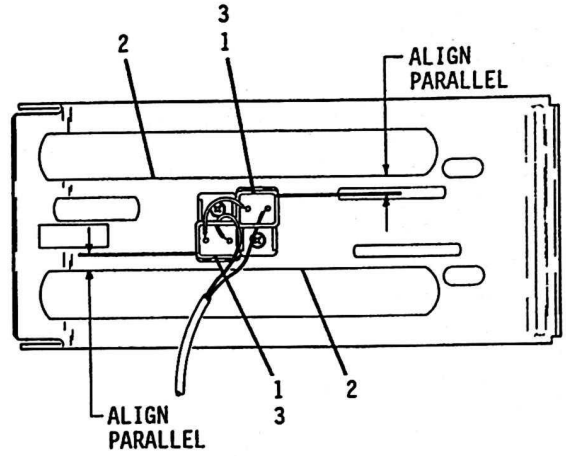


Figure 12.

BILL GUIDE INSTALLATION
(Refer To Figure 13)

NOTE

While installing the bill guide, care should be taken not to damage the switch actuators.

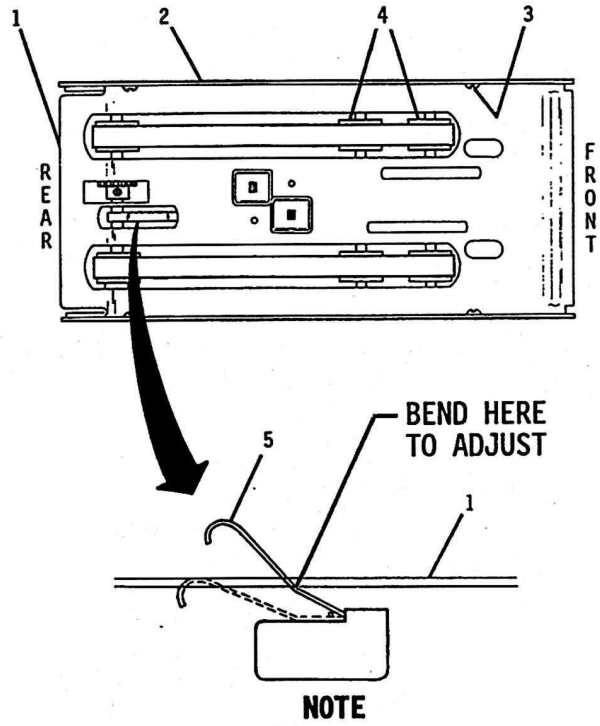
NOTE

As the bill guide is lowered in place, the scan head cable harness should be pulled back through the frame assembly.

1. Place the bill guide (1) in the frame assembly (2) and secure it with four screws (3).

2. Check the belt drive pulleys (4) for correct alignment with the bill guide. Pulleys should not rub against slots in the bill guide.

3. Make sure the vend switch actuator (5) travels below the bill guide surface (1) before bottoming against the switch body.



NOTE

If the vend switch does not actuate as a bill depresses the actuator, carefully bend the actuator as shown. Too much bend will cause bills to jam.

Figure 13.

DISASSEMBLY OF PLATEN ASSEMBLY
(Refer To Figure 14)

1. Remove four screws (1) securing the platen assembly cover (2) and remove the cover.

2. Grasp the latch spring (3) and pull it from between the latch bars (4).

3. Push each latch bar toward the opposite side of the platen.

4. Remove one latch bar then the other by angling each toward the front of the bill guide and lifting out.

5. Apply downward pressure to the anti-retrieval arm (5). Then rotate the pressure block (6) toward the rear of the platen assembly. Slide the pressure block to the right.

6. Rotate the anti-retrieval arm about the shaft (7). When it stops against the long head roller arm (8), pull forward and lift it out.

(Refer To Figure 15)

7. Remove one retaining ring (12) from the end of the roller shaft (7). Slide the shaft to the side and lift it out along with the roller arms and spring.

CAUTION

The Pressure springs will fly out of the platen assembly when removed. Place a hand or rag over the spring during removal.

8. Remove the pressure spring (9) and roller (10) by applying pressure to the short end of the pressure spring. This forces the pressure spring under the retainer (11). Repeat Step 8 for each pressure spring and roller.

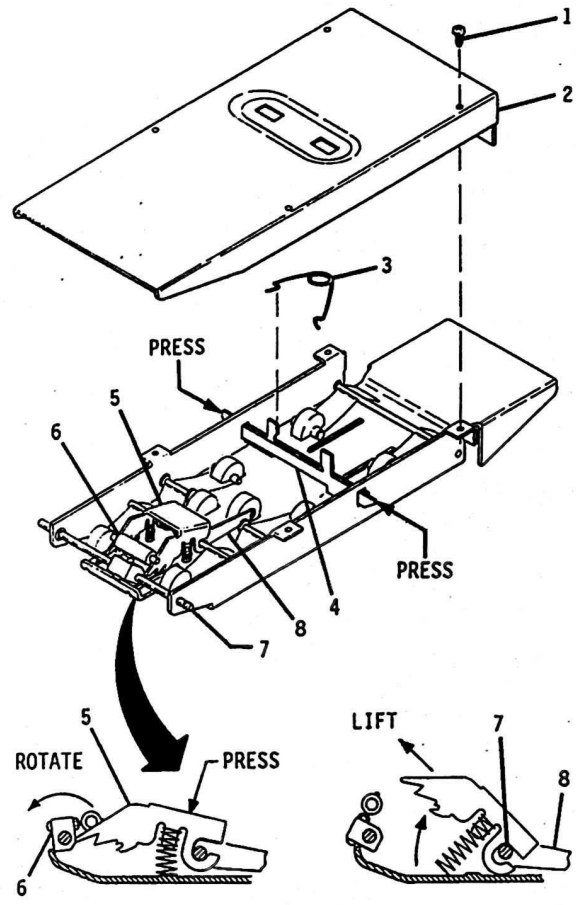


Figure 14.

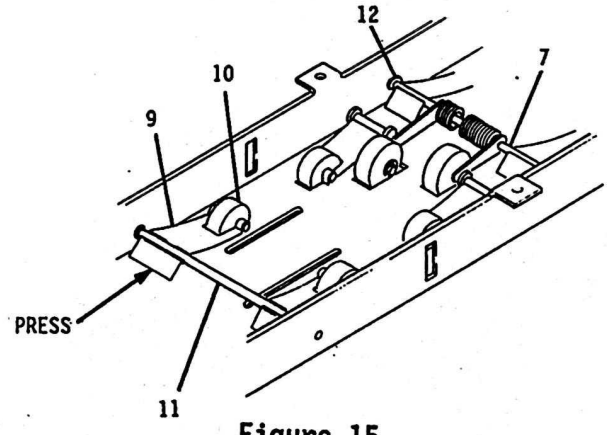


Figure 15.

ASSEMBLY OF PLATEN ASSEMBLY
(Refer To Figure 16)

1. Check the platen for burrs or damage. Use a fine grade emory cloth to remove burrs.

2. Inspect the pressure springs (1) to ensure they are formed correctly.

3. Lightly coat the pressure roller shaft (2) with molydisulfide grease. Then place the roller in the spring.

4. Align the pressure spring with the side of the platen. Press the end of the spring under the retainer (pivot post or shaft)(3).

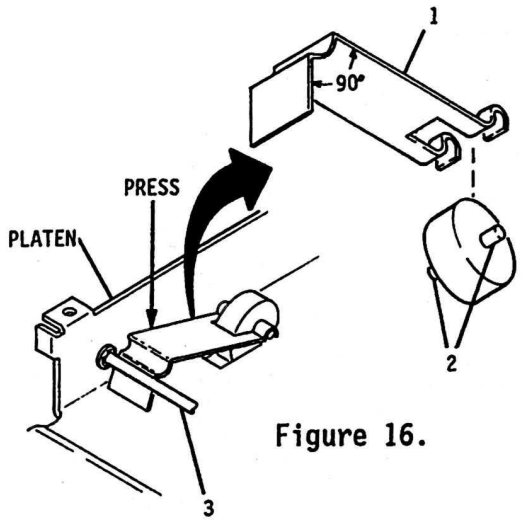


Figure 16.

(Refer To Figure 17)

5. Insert roller shaft (4) in the hole in the platen and slide to the side. Insert the other end of the shaft into the hole in the opposite side of the platen. Be sure the spring applies prssure to the roller arms. The rollers should protrude through the slots in the platen.

6. Install a retaining ring in the slot in the roller shaft (4).

7. Capture the shaft (4) with the slots in the sides of the anti-retrieval arm (5).

8. Using a finger, press each spring (6) on the anti-retrieval arm over the raised boss in the platen.

9. Rotate the pressure block (8) about the pivot shaft (7) and toward front of the platen.Then slide it to the center of the platen.

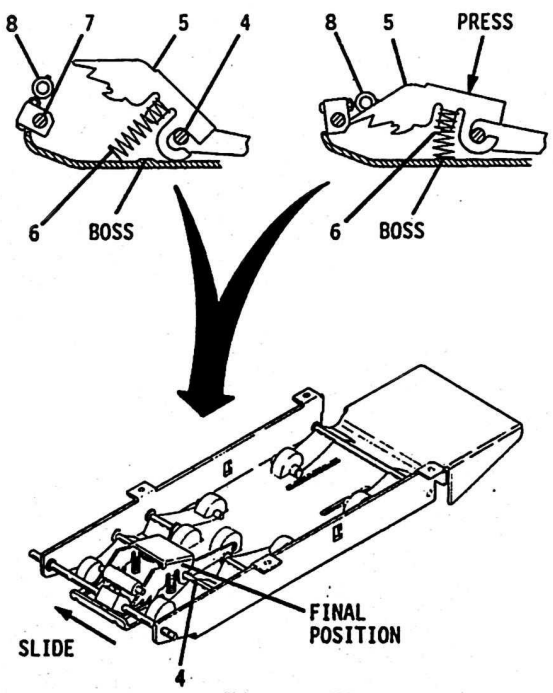


Figure 17.

10. Apply downward pressure on the anti-retrieval arm (5). Rotate the pressure block (8) toward the front of the platen until it rests on top of the anti-retrieval arm.

11. Slowly release pressure on the anti-retrieval arm (5). The anti-retrieval arm and pressure block should remain in this position but under pressure from the springs (6) on the anti-retrieval arm.

(Refer To Figure 18)

12. With the tang of the latch bar (9) up, slide the square end of the bar through the slot in the side of the platen. Perform this step for each latch bar.

13. Align both latch bars (9) perpendicular to the sides of the platen. Slide the angled end of each latch bar through the slot in the opposite side of the platen until it stops.

14. Compress the ends of the latch spring (10). Insert the spring ends between the latch bar tangs. Release the ends of the spring.

15. Place the cover (11) on the platen and secure it with four screws (12).

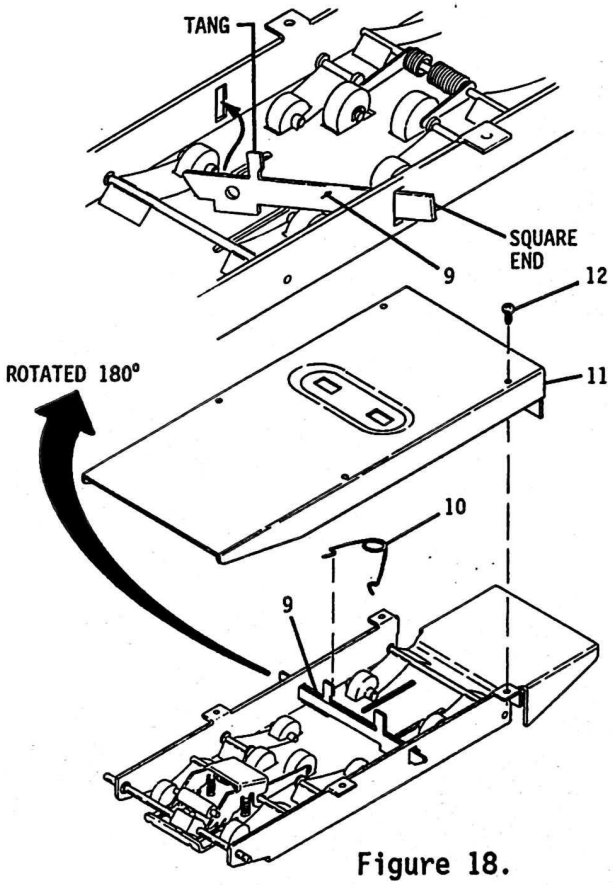


Figure 18.

ANTI-RETRIEVAL ARM TEETH ADJUSTMENT
(Refer To Figure 19)

1. Turn the adjustment screw (1) to raise or lower teeth of anti-retrieval arm (2). CCW raises the teeth. Clearance between the teeth and the platen should be .020in.

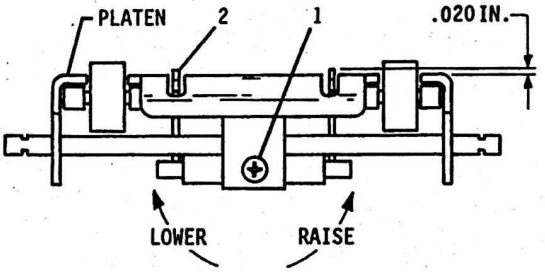


Figure 19.

PLATEN ASSEMBLY INSTALLATION
(Refer To Figure 20)

1. Tilt the platen assembly (1) slightly. Insert the platen pivot shaft (2) into the hole in rear side of the bill guide (3).

2. Lower the opposite side of the platen assembly. Insert the platen pivot shaft into the hole in the opposite side of the bill guide.

3. Install an "E"-type retaining ring (4) in the grooves in each end of the platen pivot shaft.

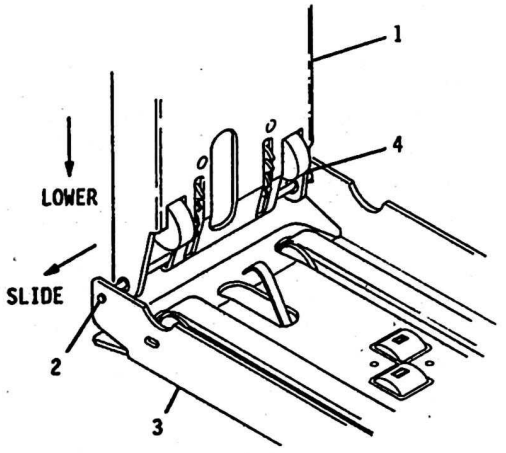


Figure 20.

CONNECTING HARNESS TO PCB
(Refer To Figure 21)

1. Connect J3 to P1 and J4 to P3 on PCB cover assembly (1).

2. Connect motor harness connector J1 to bill acceptor connector J5.

3. Connect the black lead to E1 and the white lead to E2 on the PCB cover assembly (1).

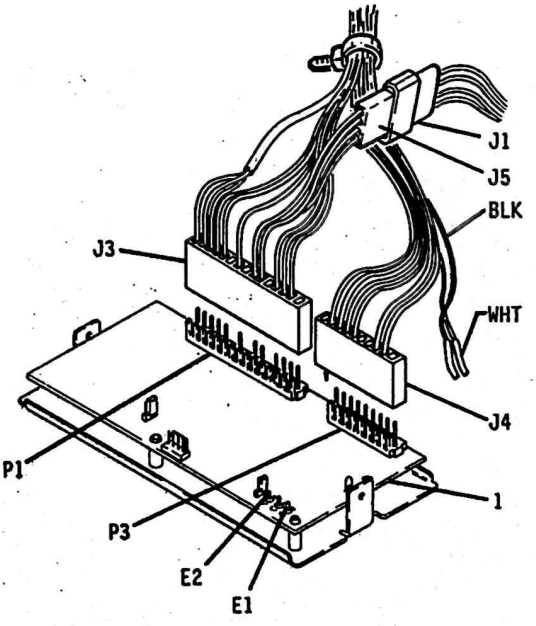


Figure 21.

FINAL ASSEMBLY (Refer To Figure 22)

1. Place the right and left side covers (1 and 2) on the bill acceptor (3). Secure them with screws (4).

2. Install the PCB cover assembly (5). Secure it to the bill acceptor (3) with two screws (6).

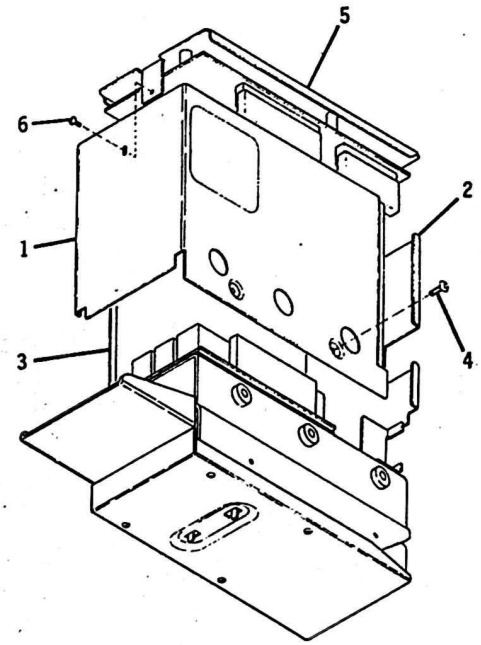


Figure 22.

FUNCTIONAL TESTING (Refer To Figure 23)

1. Place the bill acceptor (1) in a test stand (2).

2. Plug the test cable (3) into the bill acceptor at connector J1. Plug the power inlet end of the cable into a standard wall outlet.

3. Refer to the table below when reading the test cable indicators.

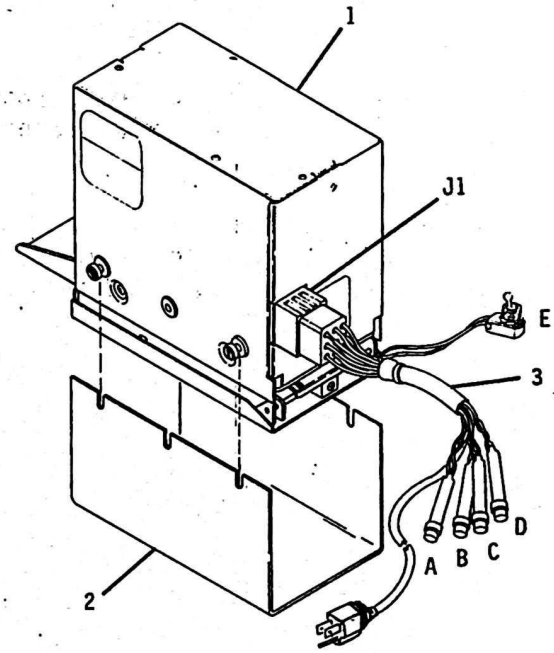


Figure 23.

INDICATOR	STATUS	CONDITION
A	ON	Standby
	OFF	Bill Accepted
B	ON	$1 Bill Accepted
C	ON	$5 Bill Accepted
D	ON	Any Bill Accepted, Stacker Start Pulse Set

4. The test cable toggle switch acts as the inhibit switch. When in the "Off" position it prevents the bill acceptor from taking currency.

5. Perform the following test with at least 25 bills. Bills may be $1's and $5's. No more than 10 percent rejection is allowable.

   A. Feed bills into the bill acceptor and monitor the test cable for correct indicators.

   B. Insert some bills upsidedown. They should be rejected.

   C. Insert a $1, $5, $10, and $20 The $10 and $20 should be rejected.

6. Remove the power inlet plug of the test cable from the wall outlet.

7. Disconnect the test cable from the bill acceptor connector.

CLEANING AND LUBRICATING

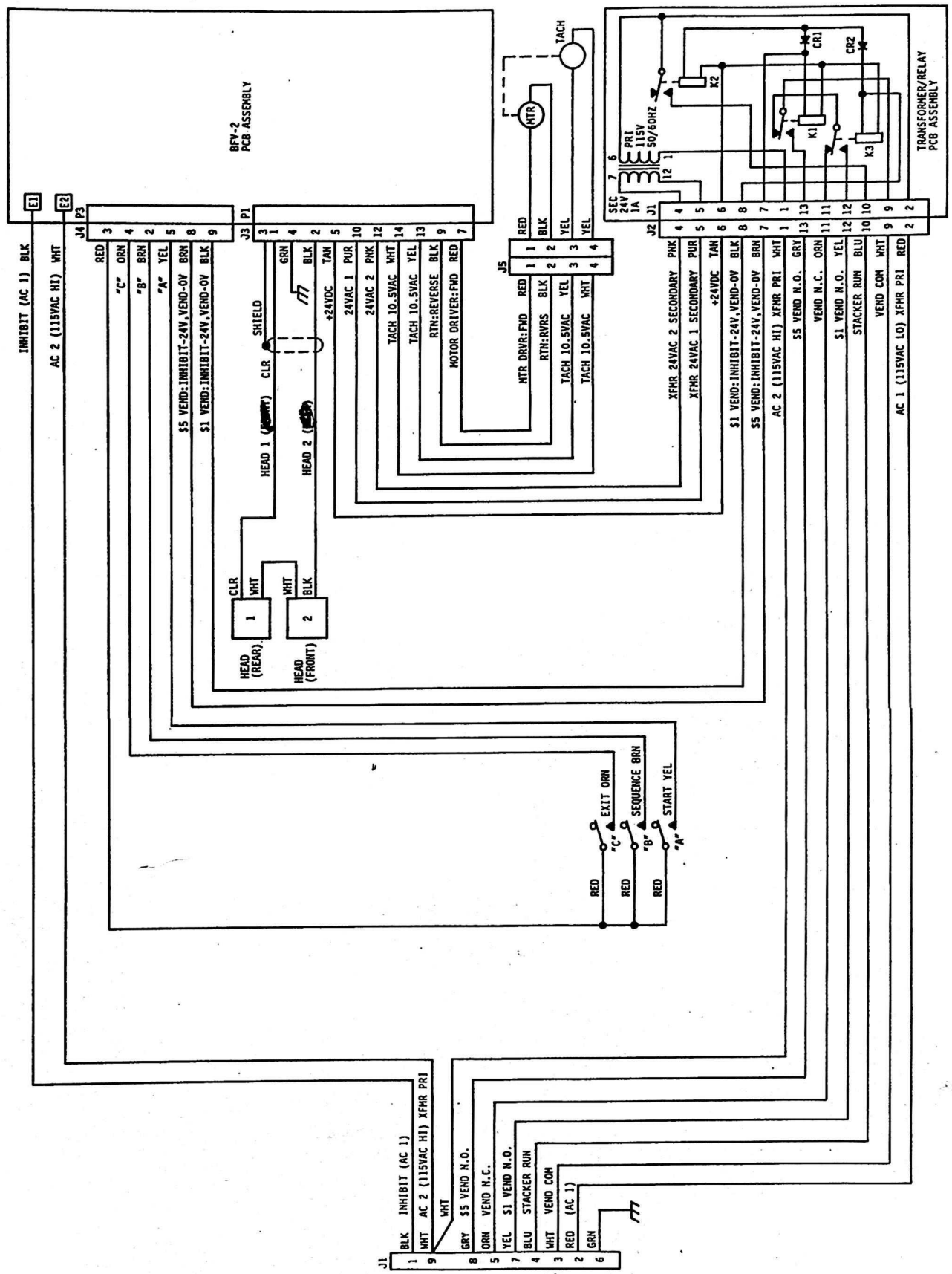
WARNING

DO NOT perform any cleaning or lubricating procedures unless power has been removed from bill acceptor.

1. Clean the scan heads using a cotton tipped swab moistened with denatured alcohol.

2. Clean the platen surface and the bill guide surface with a dry, lint free cloth only.

3. Lubricate the pressure rollers, worm gear and drive gear with molydisulfide grease.


E3
BFV-2
PCB ASSEMBLY
TRANSFORMER/RELAY
PCB ASSEMBLY
INHIBIT (AC 1) BLK
AC 2 (115VAC HI) WHT
E1
E2
P3
J4
P1
J3
J5
J1
J2
MTR
TACH
CR1
CR2
K1
K2
K3
PRI
115V
50/60HZ
SEC
24V
1A
HEAD 1 (REAR)
HEAD 2 (FRONT)
HEAD (REAR)
HEAD (FRONT)
CLR
SHIELD
WHT
BLK
GRN
TAN
PUR
PNK
YEL
BRN
ORN
RED
BLU
GRY
"C" ORN
"B" BRN
"A" YEL
$5 VEND:INHIBIT-24V,VEND-0V BRN
$1 VEND:INHIBIT-24V,VEND-0V BLK
+24VDC
24VAC 1
24VAC 2
TACH 10.5VAC WHT
TACH 10.5VAC YEL
RTN:REVERSE BLK
MOTOR DRIVER:FWD RED
MTR DRVR:FWD RED
RTN:RVRS BLK
TACH 10.5VAC YEL
TACH 10.5VAC WHT
XFMR 24VAC 2 SECONDARY PNK
XFMR 24VAC 1 SECONDARY PUR
+24VDC TAN
$1 VEND:INHIBIT-24V,VEND-0V BLK
$5 VEND:INHIBIT-24V,VEND-0V BRN
AC 2 (115VAC HI) XFMR PRI WHT
$5 VEND N.O. GRY
VEND N.C. ORN
$1 VEND N.O. YEL
STACKER RUN BLU
VEND COM WHT
AC 1 (115VAC LO) XFMR PRI RED
EXIT ORN
SEQUENCE BRN
START YEL
"C"
"B"
"A"
INHIBIT (AC 1)
AC 2 (115VAC HI) XFMR PRI
$5 VEND N.O.
VEND N.C.
$1 VEND N.O.
STACKER RUN
VEND COM
(AC 1)

NOTES

PARTS
SECTION II

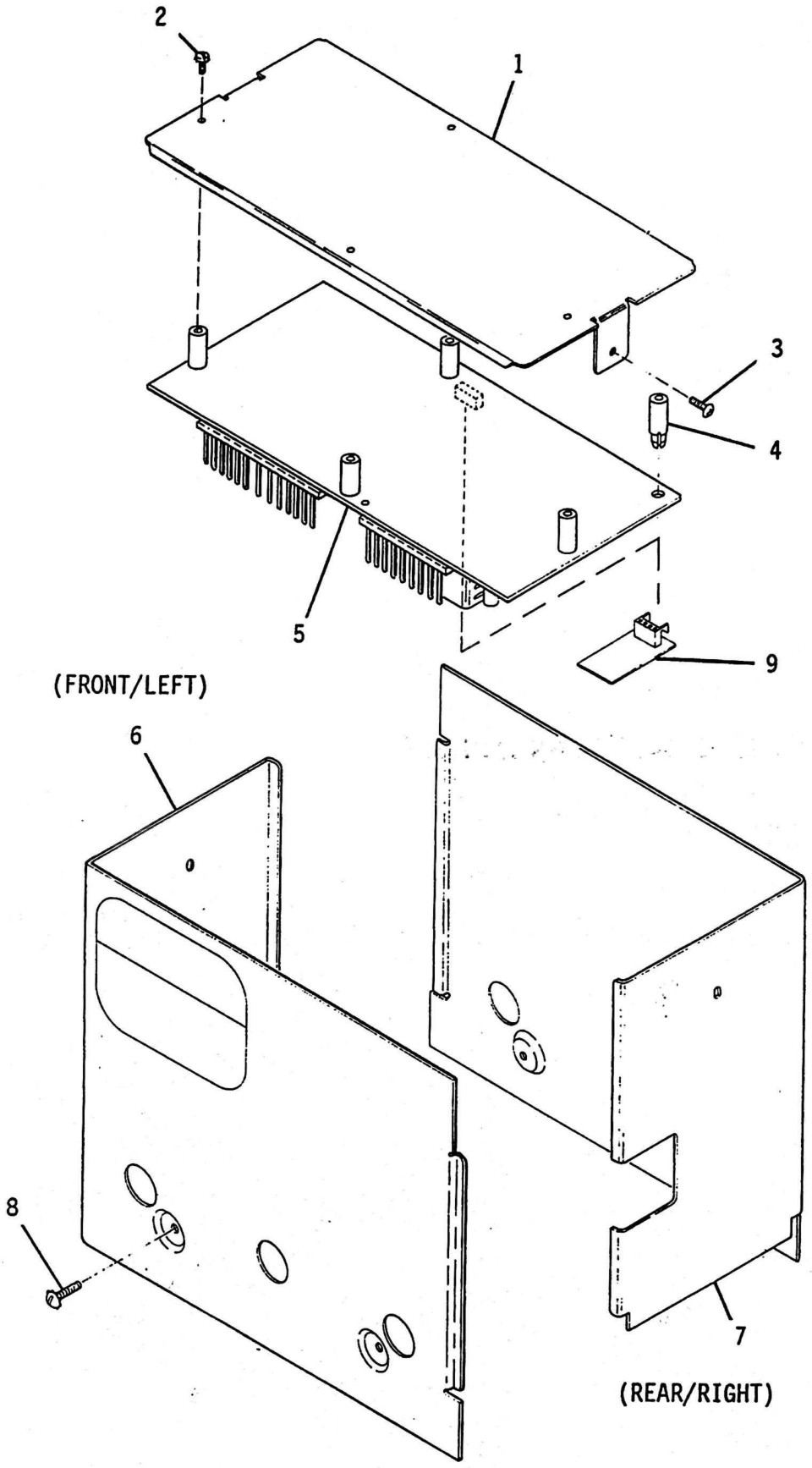


Figure 1

FIGURE-INDEX NUMBER	DESCRIPTION	NRI PART NO.	N/V PART NO.	QTY
1-1	Cover - PCB	18231002	5271779	1
1-2	Screw #4-40 x 5/16, PHS	----	6207518	4
1-3	Screw #4-40 x 1/4, PPHD, MACH, ZP	01440104	5262138	2
1-4	Standoff - PCB Assembly	----	9989512	1
1-5	PCB Assembly	----	5277458	1
1-6	Plate - Side - Front/Left	182229001	5277167	1
1-7	Plate - Side - Rear/Right	182229000	5271766	1
1-8	Screw #6-32 x 1/8	----	9900090	4
1-9	PCB Assembly - BFV - 2RAM (J1 to P2)	----	5277442	1
N/S	Shipping Label (Attached to Rear Side)	056960041	5263107	1
N/S	Serial Number Label (Attached to Left Side)	----	5277441	1
1→5	UPDATE KIT #5277434 P.C.B. BD.			

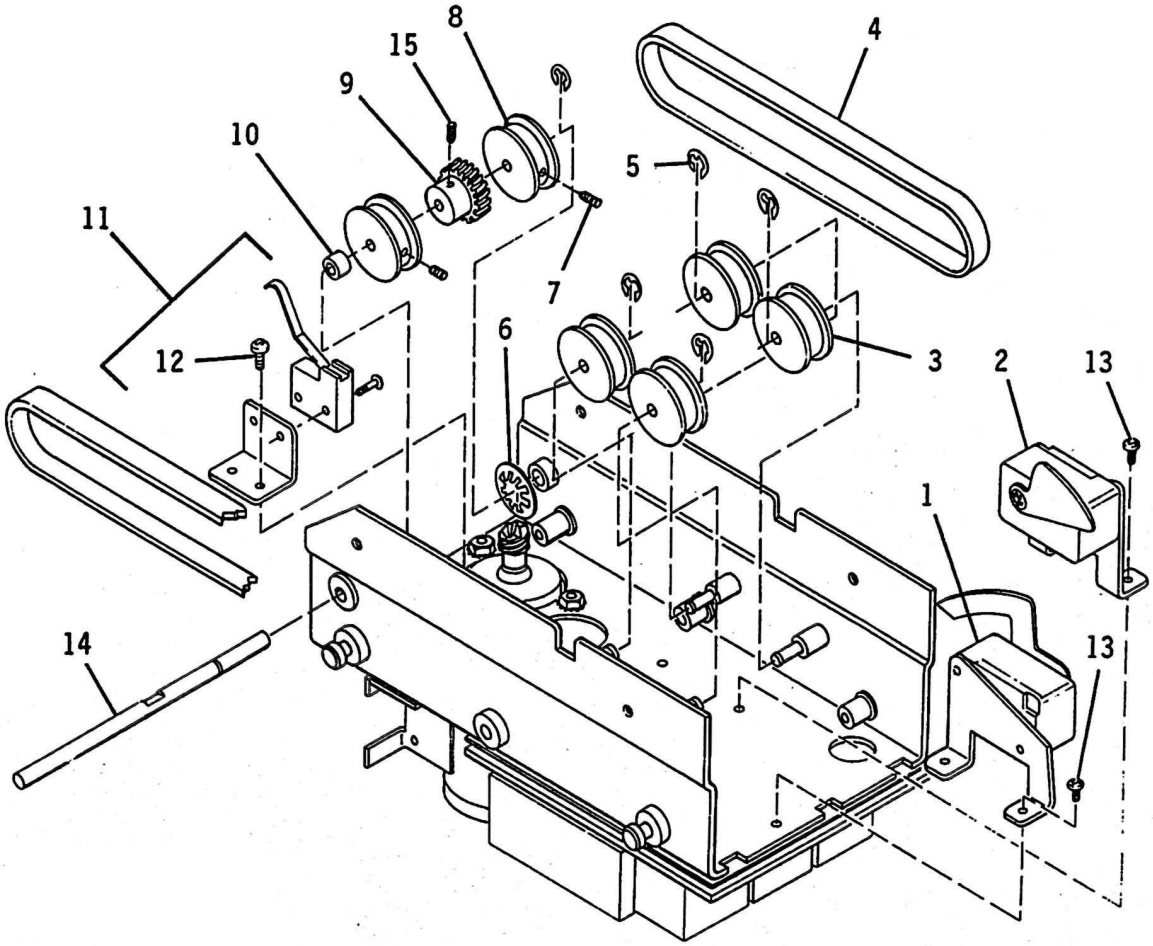


Figure 2

FIGURE-INDEX NUMBER	DESCRIPTION	NRI PART NO.	N/V PART NO.	QTY
2-1	Switch Assembly - Start	18210004	5271671	1
2-2	Switch Assembly - Safety	18210003	5271672	1
2-3	Pulley - Idler	09117003	5264579	4
2-4	Belt - Transport	18216005	5271687	2
2-5	Retainer - E-Ring	08959006	5264407	5
2-6	Retainer - Spring - Fast Grip	09994002	5265341	2
2-7	Screw - Set #6-32 x 3/16	----	6104493	2
2-8	Pulley - Drive	09117005	5264581	2
2-9	Gear	----	5277448	1
2-10	Collar - Spacer	08804256	5264277	1
2-11	Switch and Bracket Assembly - Vend	18215001	5271682	1
2-12	Screw #6-32 x 3/16, PPHD	01632103	5262215	2
2-13	Screw #4-40 x 1/8, PPHD	01440102	5262136	4
2-14	Shaft - Drive	08792057	5264173	1
2-15	Screw - Set #6-32 x 3/16, Self-locking	19710000	5275081	1

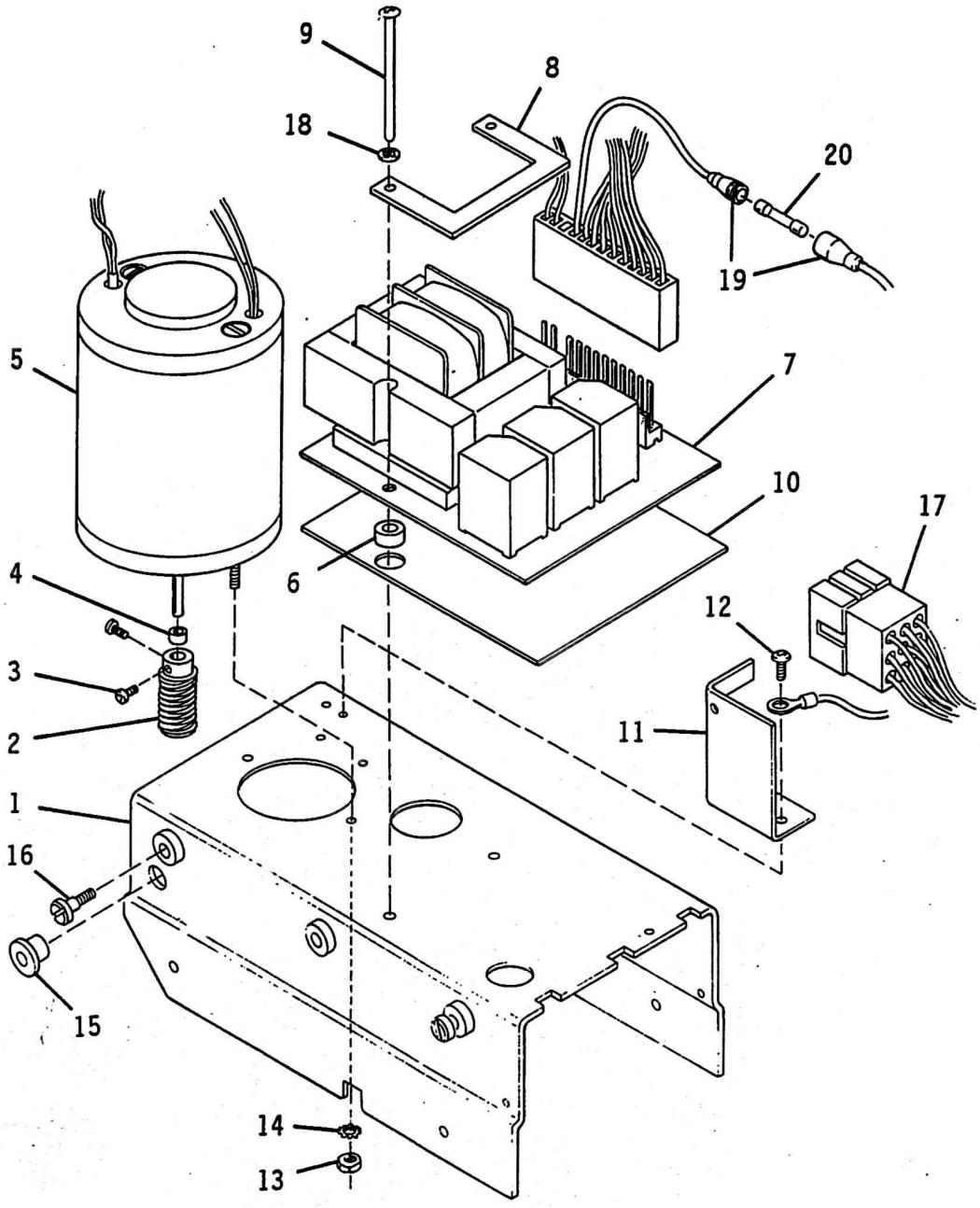


Figure 3

FIGURE-INDEX NUMBER	DESCRIPTION	NRI PART NO.	N/V PART NO.	QTY
3-1	Frame, Bushing and Stud Assembly	----	5277192	1
3-2	Gear - Worm Drive	----	5277460	1
3-3	Screw #2-56 x 1/8	01256102	5262077	2
3-4	Bushing - Motor - Nylon	02389013	5264290	1
3-5	Motor Assembly	----	5277438	1
3-6	Spacer - Nylon	----	5277437	2
3-7	PCB Assembly	----	5277433	1
3-8	Retainer - Transformer	19654000	5275030	1
3-9	Screw #6-32 x 1-3/4,PPHD	01632128	5262229	2
3-10	Insulator - Transformer	----	5277436	1
3-11	Bracket - Connector	18218000	5271689	1
3-12	Screw #6-32 x 3/16,PPHD	01632103	5262215	2
3-13	Nut #6-32	----	9900016	2
3-14	Lockwasher - External Tooth	----	9900018	2
3-15	Bushing - Bronze	09436085	5264786	2
3-16	Screw - Shoulder	----	5277354	4
3-17	Harness - Validator	----	5277439	1
3-18	Lockwasher #6	09971003	5265275	2
3-19	Holder - Fuse	----	9989484	1
3-20	Fuse - Time Delay - 3 AMP	----	9989468	1

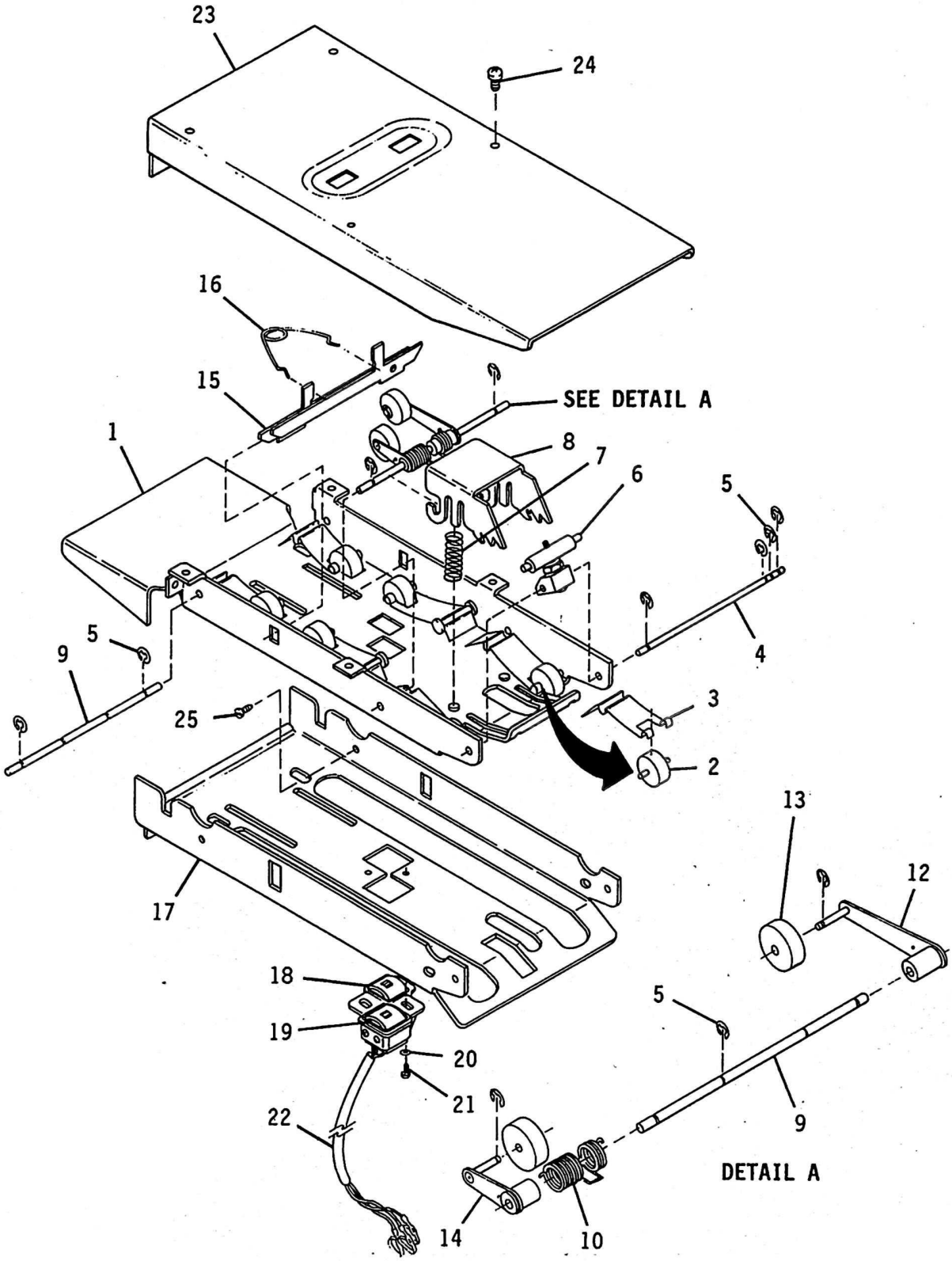

23
24
16
15
SEE DETAIL A
1
8
7
6
5
5
9
4
25
3
2
13
12
17
18
19
20
21
22
5
9
DETAIL A
14
10

Figure 4

PLATEN KIT #5277463

5277466

FIGURE-INDEX NUMBER	DESCRIPTION	NRI PART NO.	N/V PART NO.	QTY
4-1	Platen	----	5277462	1
4-2	Roller - Pressure	----	5271917	6
4-3	Spring - Pressure Roller	1824000	5271913	6
4-4	Shaft - Platen Pivot	08792044	5264162	1
4-5	Retainer - E-Ring	08959008	5264408	12
4-6	Pressure Block Assembly	18609000	5272810	1
4-7	Spring - Anti-Retrieval	08987004	5264475	2
4-8	Arm - Anti-Retrieval	18606001	5272803	1
4-9	Shaft - Roller Arm	08792042	5264160	2
4-10	Spring - Head Pressure	08974-27	5264463	1
4-11	Deleted			
4-12	Arm - Long Head Roller	18623001	5272904	1
4-13	Roller - Head	08804261	5264282	2
4-14	Arm - Short Head Roller	18623000	5272903	1
4-15	Latch - Bar	----	5277409	2
4-16	Spring - Latch	----	5277408	1
4-17	Guide - Horizontal Bill	18586000	5272766	1
4-18	Bracket - Head	----	5277414	2
4-19	Head - Scan(Includes mounting screws)	----	5277469	2
4-20	Washer - Door Latch	----	1119030	2
4-21	Screw #4-40 x 1/8, PPHD	01440102	5262136	2
4-22	Harness - Heads	----	5277440	1
4-23	Cover - Platen	----	5277410	1
4-24	Screw #4-40 x 3/16, PPHD, MACH, ZP	01440103	5262137	4
4-25	Screw - Truss Head #6-32 x 1/8 (Attaches Bill Guide, Index 4-16,to the Frame, Bushing and Stud Assembly,Index 3-1)	01632502	5262239	4
N/S	Wire - Jumper - No. 22GA (Connected to one terminal of each scan head)	18964003	5273686	1

BFV-2 BILL ACCEPTOR

INITIAL INSTALLATION & ROUTINE SERVICE

PREPARING THE BFV-2 FOR INSTALLATION

See Figure 1.

1. Remove screws and lift cover assembly to access the controller PCB assembly.
2. Place security level jumper in either the HI or LOW security position.
3. Place $5 acceptance jumper in $5 ACCEPT or $5 REJECT position.
4. Install or remove the optional stringing protection PCB assembly as desired.
5. Replace the cover assembly and secure in place with the screws removed in Step 1.

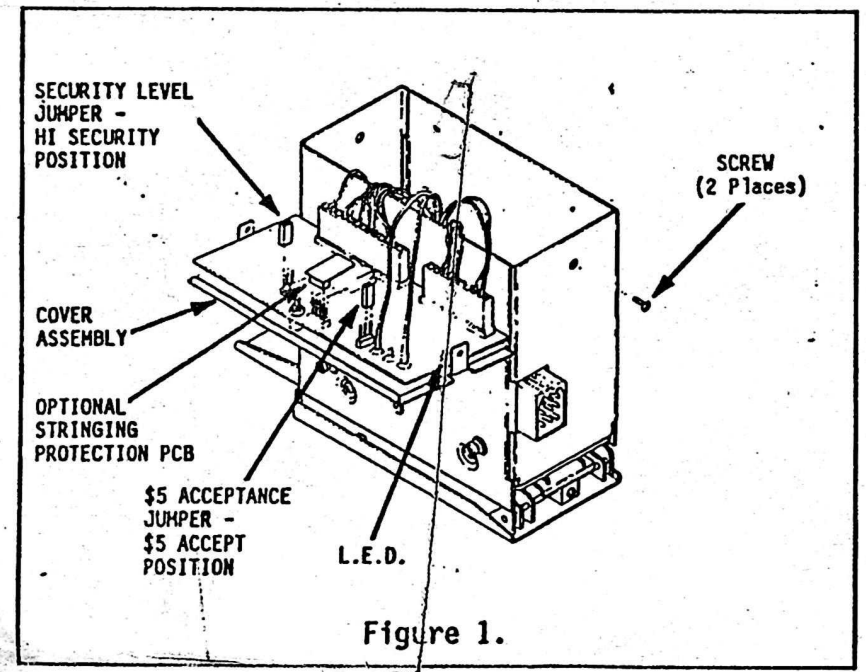

SECURITY LEVEL JUMPER - HI SECURITY POSITION
SCREW (2 Places)
COVER ASSEMBLY
OPTIONAL STRINGING PROTECTION PCB
$5 ACCEPTANCE JUMPER - $5 ACCEPT POSITION
L.E.D.

Figure 1.

LED DIAGNOSTIC SIGNALS

See Figure 1.

WARNING

DISCONNECT THE BFV-2 FROM ITS POWER SOURCE BEFORE REMOVING OR REPLACING THE COVER ASSEMBLY.

1. Remove screws and lift cover assembly to access the controller PCB assembly.
2. Locate the LED on the circuit board.
3. Reconnect the BFV-2 to its power supply.
4. Observe the LED signal and refer to Table 1.

SIGNAL	CONDITION
Steady ON/OFF One Per Second	Normal - Ready to accept bills.
OFF Continuously	The motor is running.
ON Continuously	The enable circuits are OFF.
RAPID FLASHING Five Per Second	One or more of the switches are jammed.
ON Ten Seconds OFF Ten Seconds	Stringing was detected. Microprocessor is in a five minute delay. This only applies when the stringing protection PCB is installed.

Table 1. LED Diagnostic Signals

5. Replace cover and secure in place with the screws removed in Step 1.